In the Claims:

Please amend Claims 1, 3, 4, 5, 11, and 23. Please add new Claims 34 through 37. A complete copy of the claims including marked-up versions of each claim which is amended in this Amendment, appears below.

1. (Currently Amended) An insulated wall panel, comprising:

a rigid foam sheet with first and second planar sides and first and second opposing edges and having first and second grooves extending substantially the full length of the sheet in a substantially parallel orientation, said first and said second grooves located only in the first planar side of the sheet ~~and first and second opposing edges~~ with said first and second grooves located generally parallel to ~~the first and second grooves~~ said first and second opposing edges;

a first reinforcing strip having a length, a top and a bottom with the bottom being disposed in the first groove and the top facing outwardly away from the first groove, wherein the first strip extends substantially the full length of the sheet and disposed in said sheet inwardly away from the first and second edges of the sheet;

a second reinforcing strip having a length, a top and a bottom with the bottom being disposed in the second groove and the top facing outwardly away from the second groove, wherein the second strip extends substantially the full length of the sheet and is disposed in said sheet inwardly away from the first and second edges of the sheet;

a first thin reinforcing layer bonded to the first planar side of the sheet, and extending across the top of the first and second grooves and substantially covering the entire first planar side of the sheet; and

a second thin reinforcing layer bonded to the second planar side of the sheet and extending across substantially an entire surface of second planar side.

2. (Original) The insulated wall panel of Claim 1, wherein the bottoms of the first and second strips each have two downwardly extending flanges that are oriented substantially perpendicular to the first planar side.

3. (Currently Amended) An insulated wall panel, comprising:

a rigid foam sheet with first and second planar sides and having first and second grooves extending substantially the full length of the sheet in a substantially parallel orientation ~~in~~ within only the first side of the sheet;

a first reinforcing strip having a length, a top and a bottom with the bottom being disposed in the first groove and the top facing outwardly away from the first groove, wherein the first strip extends substantially the full length of the sheet;

a second reinforcing strip having a length, a top and a bottom with the bottom being disposed in the second groove and the top facing outwardly away from the second groove, wherein the second strip extends substantially the full length of the sheet;

a first thin reinforcing layer bonded to the first planar side of the sheet, and extending across the top of the first and second grooves and substantially covering the entire first planar side of the sheet; and

a second thin reinforcing layer bonded to the second planar side of the sheet and extending across substantially an entire surface of second planar side, wherein the bottoms of the first and second strips each have two downwardly extending flanges that are oriented substantially perpendicular to the first planar side, and further wherein the top of the first and second reinforcing strips are mechanically textured over the length of the first and second strips to provide an improved gripping surface for drills and self tapping screws.

4. (Currently Amended) An insulated wall panel, comprising:

a rigid foam sheet with first and second planar sides and having first and second grooves extending substantially the full length of the sheet in a substantially parallel orientation ~~in~~ within only the first side of the sheet;

a first reinforcing strip having a length, a top and a bottom with the bottom being disposed in the first groove and the top facing outwardly away from the first groove, wherein the first strip extends substantially the full length of the sheet;

a second reinforcing strip having a length, a top and a bottom with the bottom being disposed in the second groove and the top facing outwardly away from the second groove, wherein the second strip extends substantially the full length of the sheet;

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a first thin reinforcing layer bonded to the first planar side of the sheet, and extending across the top of the first and second grooves and substantially covering the entire first planar side of the sheet; and

a second thin reinforcing layer bonded to the second planar side of the sheet and extending across substantially an entire surface of second planar side, wherein the bottoms of the first and second strips each have two downwardly extending flanges that are oriented substantially perpendicular to the first planar side, and further wherein the top of the first and second reinforcing strips have a plurality of holes spaced apart at predetermined intervals along the length of the first and second reinforcing strips.

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5. (Currently Amended) An insulated wall panel, comprising:

a rigid foam sheet with first and second planar sides and having first and second grooves extending substantially the full length of the sheet in a substantially parallel orientation ~~in~~ within only the first side of the sheet;

a first reinforcing strip having a length, a top and a bottom with the bottom being disposed in the first groove and the top facing outwardly away from the first groove, wherein the first strip extends substantially the full length of the sheet;

a second reinforcing strip having a length, a top and a bottom with the bottom being disposed in the second groove and the top facing outwardly away from the second groove, wherein the second strip extends substantially the full length of the sheet;

a first thin reinforcing layer bonded to the first planar side of the sheet, and extending across the top of the first and second grooves and substantially covering the entire first planar side of the sheet; and

a second thin reinforcing layer bonded to the second planar side of the sheet and extending across substantially an entire surface of second planar side, wherein the bottoms of the first and second strips each have two downwardly extending flanges that are oriented substantially perpendicular to the first planar side, and further wherein the top of the first and second reinforcing strips have a plurality of slots spaced apart at predetermined intervals along the length of the first and second reinforcing strips.

6. (Previously Presented) The insulated wall panel of any of Claims 3, 4 or 5, wherein the first reinforcing layer is bonded to the rigid foam sheet to enclose the first and second reinforcing strips and define a first vapor barrier across substantially the entire first side of the sheet.

7. (Original) The insulated wall panel of Claim 6, wherein the second reinforcing layer is bonded to the rigid foam sheet to define a second vapor barrier across substantially the entire second side of the sheet.

8. (Original) The insulated wall panel of Claim 7, wherein the first and second reinforcing layers have a tensile strength at least 100 times as great as the tensile strength of the foam sheet.

9. (Previously Presented) An insulated wall panel, comprising:

a rigid foam sheet with first and second planar sides and having first and second grooves extending substantially the full length of the sheet in a substantially parallel orientation in the first side of the sheet;

a first reinforcing strip having a length, a top and a bottom with the bottom being disposed in the first groove and the top facing outwardly away from the first groove, wherein the first strip extends substantially the full length of the sheet;

a second reinforcing strip having a length, a top and a bottom with the bottom being disposed in the second groove and the top facing outwardly away from the second groove, wherein the second strip extends substantially the full length of the sheet;

a first thin reinforcing layer bonded to the first planar side of the sheet, and extending across the top of the first and second grooves and substantially covering the entire first planar side of the sheet; and

a second thin reinforcing layer bonded to the second planar side of the sheet and extending across substantially an entire surface of second planar side, wherein the bottoms of the first and second strips each have two downwardly extending flanges that are oriented substantially perpendicular to the first planar side, wherein the first reinforcing layer is bonded to the rigid foam sheet to enclose the first and second

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reinforcing strips and define a first vapor barrier across substantially the entire first side of the sheet, wherein the second reinforcing layer is bonded to the rigid foam sheet to define a second vapor barrier across substantially the entire second side of the sheet, wherein the first and second reinforcing layers have a tensile strength at least 100 times as great as the tensile strength of the foam sheet, and wherein a first portion of the first reinforcing layer extending across the top of the first reinforcing strip is placed in tension when the panel is bent away from the first reinforcing strip before the foam sheet will fracture at the first groove.

10. (Previously Presented) An insulated wall panel, comprising:

a rigid foam sheet with first and second planar sides and having first and second grooves extending substantially the full length of the sheet in a substantially parallel orientation in the first side of the sheet;

a first reinforcing strip having a length, a top and a bottom with the bottom being disposed in the first groove and the top facing outwardly away from the first groove, wherein the first strip extends substantially the full length of the sheet;

a second reinforcing strip having a length, a top and a bottom with the bottom being disposed in the second groove and the top facing outwardly away from the second groove, wherein the second strip extends substantially the full length of the sheet;

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a first thin reinforcing layer bonded to the first planar side of the sheet, and extending across the top of the first and second grooves and substantially covering the entire first planar side of the sheet; and

a second thin reinforcing layer bonded to the second planar side of the sheet and extending across substantially an entire surface of second planar side, wherein the bottoms of the first and second strips each have two downwardly extending flanges that are oriented substantially perpendicular to the first planar side, wherein the first reinforcing layer is bonded to the rigid foam sheet to enclose the first and second reinforcing strips and define a first vapor barrier across substantially the entire first side of the sheet, wherein the second reinforcing layer is bonded to the rigid foam sheet to define a second vapor barrier across substantially the entire second side of the sheet, wherein the first and second reinforcing layers have a tensile strength at least 100 times as great as the tensile strength of the foam sheet, and wherein a second portion of the first reinforcing layer extending across the top of the second reinforcing strip is placed in tension when the panel is bent away from the second reinforcing strip before the foam sheet will fracture at the second groove.

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11. (Currently Amended) A method of manufacturing an insulated wall panel, comprising the steps of:

creating a rigid foam block having first, and second opposing sides;

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cutting the foam block to form a plurality of stacked individual foam sheets having first and second sides and a plurality of parallel recesses in only the first side;

inserting a reinforcing strip having a top and a bottom into each of the plurality of recesses in each of the plurality of sheets, wherein the reinforcing strip has a surface finish including at least a mechanically textured top surface and a plurality of spaced apart holes, or a plurality of spaced apart slots~~, or a combination thereof,~~ configured to engage mechanical fasteners;

covering the tops of each of the reinforcing strips with a first thin reinforcing layer; and

bonding the first reinforcing layer to the first side of each of the foam sheets.

12. (Original) The method of Claim 11, further comprising the steps of:

bonding a second reinforcing layer to the second side of each of the foam sheets.

13. (Previously Presented) A method of manufacturing an insulated wall panel, comprising the steps of:

creating a rigid foam block having first and second opposing sides;

cutting the foam block to form a plurality of stacked individual foam sheets having first and second sides and a plurality of parallel recesses in the first side;

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inserting a reinforcing strip having a top and a bottom into each of the plurality of recesses in each of the plurality of sheets;

covering the tops of each of the reinforcing strips with a first thin reinforcing layer;

bonding the first reinforcing layer to the first side of each of the foam sheets; and

bonding a second reinforcing layer to the second side of each of the foam sheets;

wherein the step of cutting the foam block includes the steps of:

drawing a hotwire frame of substantially equally spaced parallel hot wires through the block from the first side to the second opposing side of the block;

simultaneously forming each of the plurality of grooves in the block with each of the hot wires in the of the hotwire frame; and

completing a path through the block by substantially simultaneously separating the block into the plurality of sheets.

14. (Original) The method of Claim 11, wherein the step of bonding the first reinforcing layer includes at least one of the following steps:

(a) applying adhesive to the first side of each of the plurality of sheets and subsequently rolling the first reinforcing layer onto the first side;

(b) applying adhesive to the first reinforcing layer and subsequently rolling the first reinforcing layer onto the first sides of each of the foam sheets; and

(c) rolling the first reinforcing layer onto the first sides of the foam sheets and subsequently heating the first reinforcing layer to form a thermal bond between the first sides of the foam sheets and the first layer.

15. (Original) The method of Claim 11, further comprising the steps of:

orienting the foam sheet with respect to a means for trimming each sheet such that there is a predetermined distance between the means for trimming and the reinforcing strips, and trimming an edge of the foam sheet.

16. (Original) A method of manufacturing an insulated foam panel, comprising the steps of:

forming a liquid matrix of expandable foam precursor;

channeling the liquid matrix out through a nozzle;

capturing the liquid matrix between two parallel and advancing thin sheets of reinforcing material;

inserting a plurality of continuous webs of reinforcing strip between the two sheets of reinforcing material;

maintaining the sheets in a substantially parallel, spaced-apart orientation as they advance over a distance sufficient to permit the liquid matrix to expand, fill substantially an entire void between the two sheets and harden in the form of a continuously moving ribbon of insulated paneling; and

repeatedly and successively cutting the moving ribbon into a plurality of individual insulating panels having a cut edge substantially perpendicular to the direction of advancement.

17. (Original) The method of Claim 16, further comprising the steps of:

unrolling a plurality of ribbons of reinforcing material at substantially the same linear rate as the first and second sheets advance; and

roll-forming the plurality of unrolled ribbons into the plurality of continuous webs of reinforcing strip.

18. (Original) The method of Claim 17, further comprising the step of:

continuously trimming lateral opposed edges of the ribbon of insulated paneling as the ribbon advances and prior to step of repeatedly and successively cutting.

19. (Original) The method of Claim 17, wherein the step of inserting includes the steps of:

spacing the plurality of continuous webs of reinforcing strips a predetermined first distance apart.

20. (Original) The method of Claim 17, wherein the steps of maintaining the sheets includes the step of:

simultaneously maintaining the plurality of continuous webs of reinforcing strips at the predetermined first distance apart.

21. (Previously Presented) The insulated wall panel of Claim 3, wherein the first and second reinforcing strips include a central recessed portion configured to receive and support the head of a fastener.

22. (Previously Presented) The insulated wall panel of Claim 21, further comprising a plurality of fasteners coupled to the central recessed portion of both the first and second reinforcing strips.

23. (Currently Amended) An insulated wall panel, comprising:

a rigid foam sheet with first and second planar sides and having first and second grooves extending substantially the full length of the sheet in a substantially parallel orientation in only the first side of the sheet and first and second opposing edges generally parallel to the first and second grooves;

a first reinforcing strip having a length, a top and a bottom with the bottom being disposed in the first groove and the top facing outwardly away from the first groove, wherein the first strip extends substantially the full length of the sheet and disposed in said sheet inwardly away from the first and second edges of the sheet;

a second reinforcing strip having a length, a top and a bottom with the bottom being disposed in the second groove and the top facing outwardly away from the second groove, wherein the second strip extends substantially the full length of the sheet and is disposed in said sheet inwardly away from the first and second edges of the sheet;

a first thin reinforcing layer bonded to the first planar side of the sheet, and extending across the top of the first and second grooves and substantially covering the entire first planar side of the sheet; and

a second thin reinforcing layer bonded to the second planar side of the sheet and extending across substantially an entire surface of second planar side,

wherein the first and second reinforcing strips include a central recessed portion configured to receive and support the head of a fastener and two non recessed portions that flank the recessed portion and extending substantially the entire length of the respective first and second reinforcing strips.

24. (Previously Presented) The insulated wall panel of Claim 23, further comprising a plurality of headed fasteners having a head that is supported in the recessed portion and a shank that extends through the recessed portion.

25. (Previously Presented) The insulated wall panel of Claim 3 wherein an outwardly facing surface of the first and second reinforcing strips is configured to guide the insertion of a fastener therethrough.

26. (Previously Presented) The insulated wall panel of Claim 25, wherein the outwardly facing surface is configured with a surface texture that guides the insertion of a fastener therethrough.

27. (Previously Presented) The insulated wall panel of Claim 25, wherein the outwardly facing surface is configured with apertures that guide the insertion of a fastener therethrough.

28. (Previously Presented) The insulated wall panel of Claim 3, wherein the rigid foam sheet has a second side opposite the first side that has no reinforcing strips.

29. (Previously Presented) The insulated wall panel of Claim 3, wherein lateral sides of the first and second reinforcing strips are spaced at least 6 inches away from the lateral edges of the rigid foam sheet.

30. (Previously Presented) The insulated wall panel of Claim 29, wherein the first and second reinforcing strips are generally spaced 12 inches apart.

31. (Previously Presented) The insulated wall panel of Claim 3, wherein lateral sides of the first and second reinforcing strips are spaced at least 8 inches away from the lateral edges of the rigid foam sheet.

32. (Previously Presented) The insulated wall panel of Claim 31, wherein the first and second reinforcing strips are generally spaced 16 inches apart.

33. (Previously Presented) The insulated wall panel of Claim 3, wherein the first and second reinforcing layers primarily consist of paper, foil or plastic film.

34. (New) An insulated wall panel comprising:

a rigid foam sheet having first and second planar faces, and top, bottom and sides edges surrounding said first and second planar faces, each of said first and said second planar faces having a planar surface and a length and a width dimension;

at least two grooves formed within one of said first and said second planar faces, each of said groove extending said length of said first or said second planar face from said top edge to said bottom edge of said rigid foam sheet;

at least two reinforcing strips, each of said reinforcing strips completely disposed within one of said grooves and extending said length of said first or said second planar face from said top edge to said bottom edge of said rigid foam sheet;

a first reinforcing layer bonded to said first planar face of said rigid foam sheet, said first reinforcing layer completely covering said first planar face but not extending beyond said top, said bottom and said side edges of said rigid foam sheet; and

a second reinforcing layer bonded to said second planar face of said rigid foam sheet, said second reinforcing layer completely covering said second planar face but not extending beyond said top, said bottom and said side edges of said rigid foam sheet.

35. (New) The insulated wall panel of Claim 34, wherein each of said reinforcing strips has only a first portion and a second portion, said first portion recessed below said planar surface of said first or said second planar face, and said second portion co-planar with said planar surface of said first or said second planar face.

36. (New) The insulated wall panel of Claim 35, wherein each of said first portions of said reinforcing strips is configured to receive a plurality of fasteners, each of said fasteners being recessed below said planar surface of said first or said second planar face.

37. (New) The insulated wall panel of Claim 35, wherein each of said first portions of said reinforcing strips includes one of a plurality of holes or a plurality of slots for engaging said plurality of fasteners.